MSL-5 Loudspeaker

Operating Instructions

The Meyer Sound MSL-5 is an extremely high-power, high-performance loudspeaker designed for large-scale music reinforcement and public address applications. It is a bi-amplified system consisting of two proprietary 12" cone drivers in a unique horn-loaded vented enclosure, and three 2" throat diameter (4" diaphragm) high frequency drivers with vertical 70-degree horns. The MSL-5 is a full-range loudspeaker constructed as a 30-degree arrayable section, and is designed to be operated with the Meyer Sound M-5 Control Electronics Unit (one M-5 per channel). The M-5 comprises electronic crossover, Meyer Sound's exclusive SpeakerSense™ driver protection circuitry, and amplitude and phase response alignment circuitry optimized for the loudspeaker.

Meyer Sound Laboratories, Inc.
2832 San Pablo Avenue
Berkeley, CA 94702

Amplifier Requirements

The MSL-5 requires two channels of amplification with each channel meeting the following specifications:

1. Inputs. Must utilize XLR-type connectors with balanced input circuitry wired such that a positive voltage on connector pin 3 results in a positive voltage at the amplifier output.

2. Voltage Gain. Must be fixed at 16 dB (6.3 volts out for 1 volt in) when measured from input to output.

3. Mains AC Power. AC power inlet must be a three-circuit grounded plug with earth (mains AC) ground permanently connected to chassis. The amplifier must meet the power output criteria over a line voltage range of 180V to 260V AC, 50/60 Hz (may be split into two switch-selectable ranges).

4. Power Output. Each channel of amplification must meet two power criteria:

- The amplifier must be capable of driving an 8Ω load at 367 W continuously for 60 minutes without shut-down or distortion exceeding 0.1%. Following the above preconditioning, it must deliver 1100 W for 5 minutes without shut-down or distortion exceeding 0.1%.
- The amplifier must be capable of driving a 4Ω load at 1800 W in 0.5 sec. bursts without shut-down, peak clamping or distortion exceeding 0.1%.

It is highly recommended that only one high or low frequency section of the MSL-5 be driven by a single amplifier channel as each section represents a 4 ohm load.

For further information on power amplifiers, please refer to **Power Amplifier Criteria**, a Meyer Sound Technical Note available from your dealer.

Connections

The MSL-5 is a bi-amplified system and **must** be used with the **M-5 Control Electronics Unit**. The M-5 functions as an active crossover, dividing the input signal into high and low frequency components. The connection terminals of the high and low frequency drivers appear on a single EP-type 4-pin connector located on the rear of the MSL-5 cabinet. The pin assignments for this connector are:

Pin 1–Low frequency drivers, hot
Pin 2–Low frequency drivers, common
Pin 3–High frequency drivers, common
Pin 4–High frequency drivers, hot
(When the cabinet is fitted with an EP-5 connector for European use, Pin 5 is unconnected.)

The minimum wire size for connections between the MSL-5 and the power amplifiers is 14 gauge (larger for runs over 100 feet).

Note: If you are using standard Meyer Sound loudspeaker cables and adapters, simply connect the female end of the speaker cable to the MSL-5, the male end of the cable to the Meyer Sound pigtail adapter, and the banana connectors of the adapter to your amplifier outputs. In making connections between the MSL-5 and its amplifiers, be sure to connect the 12-inch drivers to the **Lo** amplifier, and the horn drivers to the **Hi** amplifier. The adapter banana plugs are color-coded as follows:

Red – Low frequency drivers
Black – High frequency drivers

For connections between the M-5 and the power amplifiers, refer to the **M-5 Operating Instructions**.

Verifying System Polarity

All Meyer Sound loudspeakers are thoroughly tested in all stages of manufacture and correct polarity of individual cabinets is assured. However, accidental polarity reversal is possible when there are multiple amplifier connections, and a single cabinet which is out of polarity with the rest of its array will cause severe cancellation. This will result in a noticeable decrease in SPL and possible component damage.

Because of the extensive signal processing circuitry of the M-5 Control Electronics Unit, the "phase-popper" type of speaker polarity checkers cannot reliably be used to test for correct polarity of the low and high drivers of the MSL-5. However, because the MSL-5 is phase-corrected through crossover, many of the portable spectrum analyzers can be used, with a pink noise source, to test for driver polarity as follows:

1. Single cabinets. First, verify polarity of the woofers by connecting a 9 volt battery at the end of the loudspeaker cable.

EP connector	**Battery**
Pin 1	+ terminal
Pin 2	– terminal

- The woofer cones should move outward. Connect the speaker cable to the amplifier.
- Input the pink noise source to the M-5 and advance its level control to a convenient measuring level.
- Standing in front of the loudspeaker, position the analyzer microphone directly between the HF horns section and the 12-inch drivers, at a right angle to

Meyer Sound

Meyer Sound Laboratories, Inc.
2832 San Pablo Avenue
Berkeley, CA 94702

the cabinet face, and about 1 meter in front of the MSL-5.

- If polarity of the high frequency drivers is reversed, a trough will appear in the response curve centered near 800 Hz. If in doubt, reverse the polarity of the **Hi** amplifier output while you watch the analyzer display.

2. Multiple cabinet arrays. Each cabinet should first be tested as above.

- Connect one loudspeaker and advance the pink noise to a convienent measuring level. Position the measuring microphone on the axis between the loudspeaker and the cabinet adjacent to it, and about 2 meters distant. Note the frequency response and overall level.

- Leaving the first loudspeaker connected, connect the adjacent one and observe the analyzer display. The entire curve should jump up in level, indicating correct addition between the loudspeakers. A polarity reversal between the loudspeakers will show up as severe broadband cancellation.

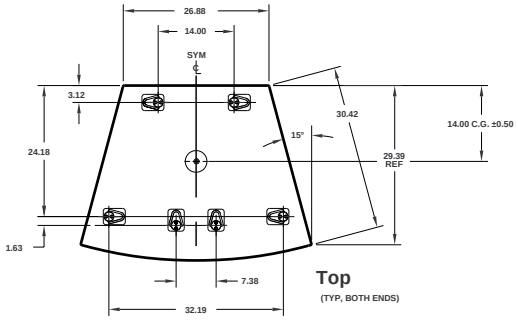
- Similarly, add in the rest of the cabinets of the array one at a time, looking for correct addition as each loudspeaker is connected. (It will be necessary to reposition the microphone.)

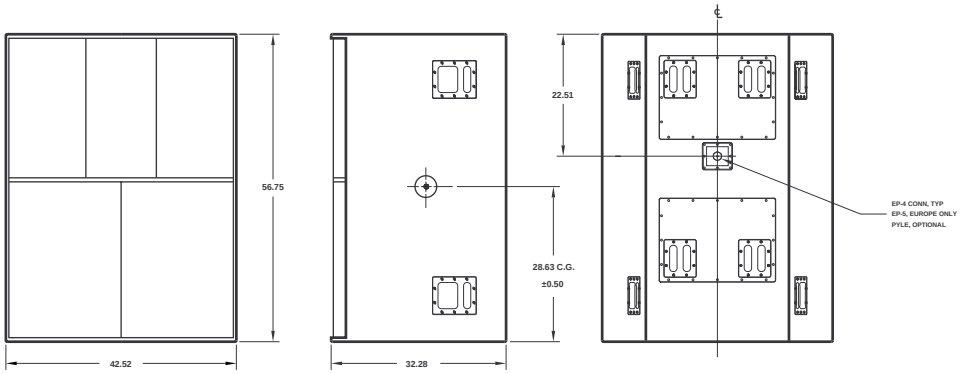
Rigging

The MSL-5 loudspeaker has twelve offset pivoting lift rings (6 top and 6 bottom) fastened externally through cabinet cut-outs to an **internal steel frame**. Please consult Meyer Sound about any questions concerning MSL-5 rigging strength and loading conditions. If the structural integrity of any cabinet has been compromised by damage or negligence, then the safety of the rigging cannot be assured. **All rigging should be done by competent professionals.**

Placement and Arraying

The MSL-5 is designed to function as a 30-degree arrayable section with additional cabinets being employed as modular 30-degree building blocks.





Meyer Sound Laboratories, Inc.
2832 San Pablo Avenue
Berkeley, CA 94702

Specifications

Acoustical MSL-5 / M-5 System[1] (two 30° sections)

Frequency Response[2]	100 Hz - 16 kHz ±4 dB
Maximum SPL at 100 feet	
Continuous	110 dB
Peak	120 dB
HF Coverage	
Horizontal	60 degrees
Vertical	70 degrees

MSL-5 Loudspeaker (one 30° section)

Driver Complement	
Low Frequency Drivers	(2) MS-12 12-inch cone drivers
High Frequency Drivers	(3) MS-2001A 2-inch throat (4" diaphragm) compression drivers
HF DC Protection	50 µf polypropylene capacitor
Enclosure	Vented, horn-loaded multi-ply hardwood
Finish	Black textured
Protective Grill	Two piece hex perforated metal, powder coated, charcoal-grey foam covering
Rigging	12 points, offset pivoting lift rings mounted on internal steel framing
Dimensions	42.52" W x 56.75" H x 32.28" D
Weight	480 lbs. (218.2 kg)
Connector	EP-4 (male), EP-5 (male, Europe only) Pyle National (optional)

Notes:
1. Acoustical specifications are given for the minimum configuration of two 30-degree sections.
2. Measured 5 meters on axis, free-field conditions, pink noise input, in third-octave bands.

Meyer Sound Laboratories, Inc.
2832 San Pablo Avenue
Berkeley, CA 94702

05.022.017.01 A
© 1994, Meyer Sound